From: Schofield, Susan
To: Zeno, Denise
Cc: Mishkin, Katherine; Hauptman, Mel
Subject: RE: Cabo Rojo - Geophysics update and proposed changes
Date: Wednesday, February 20, 2013 3:19:44 PM

Thanks for getting back to me on this – we will proceed accordingly. The drilling subcontract is still with Debbie Butler for consent. I will keep you updated with all of our progress as we move ahead.
Susan

From: Zeno, Denise [mailto:Zeno.Denise@epa.gov]
Sent: Wednesday, February 20, 2013 4:10 PM
To: Schofield, Susan
Cc: Mishkin, Katherine; Hauptman, Mel
Subject: RE: Cabo Rojo - Geophysics update and proposed changes

Susan
Go ahead and implement the suggested changes to the geophysics work.
Denise

From: Schofield, Susan [mailto:SchofieldSE@cdmsmith.com]
Sent: Thursday, February 14, 2013 2:14 PM
To: Zeno, Denise
Subject: Cabo Rojo - Geophysics update and proposed changes

Denise,
I want to bring you up to date with the geophysical services procurement for Cabo Rojo.
The first procurement was canceled because the bids were too high and were more than the amount of money in the Cabo Rojo budget. With your approval, we reduced the amount of work and also changed the scope to match our current knowledge of the site wells.
We just received the bids for the revised procurement and they are still greater than the amount of money in the approved budget. I have been thinking about this initial phase of geophysical work and would like to propose the changes outlined below.
Original scope (in Work Plan) for the geophysics: Log 3 existing wells (Ana Maria, Club de Leones, and Terminal de Carros Publicos) and collect wireline groundwater samples at fractures or inflow points indicated by the geophysics. The purpose of the geophysics is to aid our understanding of groundwater flow in the bedrock (presumably within fracture zones). The purpose of the wireline samples is to determine if contamination is flowing in preferential flow paths in the bedrock.
Current Understanding of Well Conditions: Since the work plan was completed we have inspected the wells in the field, discussing the wells with PRASA and with you, Denise. We now have a much better understanding of the wells and how they are constructed, as summarized below.

- Club de Leones – This well is fully cased with about 60 feet of screen. Geophysical logging cannot be performed in this well due to the casing. We could perform low flow sampling at intervals within the screen interval, but this is less than ideal.
- Terminal – This well is approximately 65 feet deep, fully cased in the overburden, with 7 feet of open hole. Geophysical logging cannot be performed. We could collect a groundwater sample from the screen interval/bottom of the hole.
- Ana Maria – It is currently uncertain if this well is open hole in the bedrock. PRASA could not find well records to indicate its completion and we did not find any either. Therefore, conducting geophysics is uncertain.

Pozo Escuela – Based on a tip from you, we were able to locate this well (it is approximately one block from the Ana Maria well). This well has been filled with rocks, debris and tree branches. We were able to pull out the tree branches, but the well is still blocked (presumably with rocks and debris). We were able to put a data logger in it to measure water levels, but a driller will be needed to clean out the well. We are hopeful this well can be converted to a multiport monitoring well. However, due to the blockage it cannot be geophysically logged until the well bore is cleaned out.

Suggested changes to geophysics work: Based on the information above and the status of the wells, I would like to suggest that:

1) We eliminate this initial geophysical testing and proceed directly to the PSA investigations (as soon as the drilling subcontract is approved by Debbie Butler and the subcontract can be finalized). We would not be using the information from this initial geophysics and wireline testing for the PSA investigations anyway, so moving directly to that phase of work should be ok.
2) Conduct geophysics in the Ana Maria and Pozo Escuela wells when we do the phase 2 geophysics/wireline sampling at the bedrock monitoring wells to be drilled.
3) The long term groundwater monitoring (currently underway) should give us a better understanding of groundwater flow and the influence of the pumping wells on groundwater. This information will be very useful when we plan the locations of monitoring wells (both overburden and bedrock).
4) Doing the geophysics with one mobilization instead of two will reduce the overall costs for that work.
5) Monitoring well locations will be determined more from the PSA results and long term monitoring results than from the originally planned initial geophysics/wireline sampling. Therefore, we will not be at a "data disadvantage" to plan the well locations if we shift all the geophysics/wireline sampling to 1 event instead of 2.

I will call you to discuss my suggestions shortly.

Susan

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